

## Claims

What is claimed is:

1           1. A computer-implemented method for unconscious data retrieval, com-  
2   prising:

3           extracting at least one query key from a primary document;

4           querying at least one data source with the at least one query key;

5           receiving at least one query result from at least one data source;

6           evaluating the received at least one query result; and

7           displaying at least one received query result;

8           wherein extracting, querying, receiving, and evaluating are performed  
9   without user interaction.

1           2. The method of claim 1, further comprising, prior to extracting:

2           receiving the primary document;

3           and wherein extracting, querying, receiving, and evaluating are per-  
4   formed in response to receiving the primary document.

1           3. The method of claim 1, further comprising, prior to extracting:

2           accessing the primary document;

3 and wherein extracting, querying, receiving, and evaluating are per-  
4 formed in response to accessing the primary document.

1 4. The method of claim 1, further comprising, prior to extracting:  
2 displaying the primary document;

3 and wherein extracting, querying, receiving, and evaluating are per-  
4 formed in response to displaying the primary document.

1 5. The method of claim 1, wherein the primary document comprises an  
2 electronic communication.

1 6. The method of claim 5, wherein the primary document comprises an e-  
2 mail message.

1 7. The method of claim 5, further comprising, prior to extracting:  
2 receiving the electronic communication;

3 and wherein extracting, querying, receiving, and evaluating are per-  
4 formed in response to receiving the electronic communication.

1 8. The method of claim 7, wherein receiving the electronic communication  
2 comprises receiving the electronic communication at an e-mail server.

1           9. The method of claim 7, wherein receiving the electronic communication  
2 comprises receiving the electronic communication at a user's computer.

1           10. The method of claim 7, wherein receiving the electronic communica-  
2 tion comprises retrieving the electronic communication from an e-mail server to  
3 a user's computer.

1           11. The method of claim 1, wherein extracting, querying, receiving, and  
2 evaluating are performed asynchronously with respect to user interaction with  
3 the primary document.

1           12. The method of claim 1, further comprising:  
2 storing the evaluated at least one query result;  
3  
4 and wherein displaying at least one received query result comprises:  
5 retrieving the stored at least one query result; and  
6 displaying the retrieved at least one query result.

1           13. The method of claim 1, further comprising:  
2 storing the evaluated at least one query result;  
3  
4 and wherein displaying at least one received query result comprises:  
5 receiving a query request from a user;

5 displaying a preview of at least one query result item responsive to the re-  
6 ceived query request;  
7 receiving a selection of one of the previewed items;  
8 retrieving the selected item; and  
9 displaying a representation of the selected item.

1 14. The method of claim 13, wherein retrieving the selected item com-  
2 prises retrieving the item from a cache.

1 15. The method of claim 13, wherein retrieving the selected item com-  
2 prises retrieving a text version of the item from a cache.

1 16. The method of claim 13, wherein retrieving the selected item com-  
2 prises asynchronously retrieving the selected item.

1 17. The method of claim 16, further comprising:  
2 notifying the user upon completion of the asynchronous retrieval of the  
3 selected item.

1 18. The method of claim 1, wherein querying at least one data source  
2 comprises transmitting a query over a network.

1           19. The method of claim 1, wherein querying at least one data source  
2 comprises transmitting an e-mail message containing a query to the at least one  
3 data source.

1           20. The method of claim 1, wherein querying at least one data source  
2 comprises transmitting across a firewall an e-mail message containing a query to  
3 the at least one data source.

1           21. The method of claim 1, wherein querying at least one data source  
2 comprises transmitting an XML-encoded e-mail message containing a query to  
3 the at least one data source.

1           22. The method of claim 1, wherein receiving at least one query result  
2 from at least one data source comprises receiving an e-mail message containing  
3 at least one query result from at least one data source.

1           23. The method of claim 1, wherein receiving at least one query result  
2 from at least one data source comprises receiving an XML-encoded e-mail mes-  
3 sage containing at least one query result from at least one data source.

1           24. The method of claim 1, wherein the at least one data source comprises  
2 at least one information appliance.

1           25. The method of claim 24, wherein at least one of the information appli-  
2 ances comprises one selected from the group consisting of:

- 3           a visitor kiosk;
- 4           a meeting recorder;
- 5           a presentation recorder;
- 6           a whiteboard capture device;
- 7           a communication device; and
- 8           a document management device.

1           26. The method of claim 1, wherein evaluating the received at least one  
2 query result comprises estimating the relevance of the query result with respect  
3 to the primary document.

1           27. The method of claim 1, wherein evaluating the received at least one  
2 query result comprises determining whether the query result has previously  
3 been displayed.

1           28. The method of claim 1, wherein evaluating the received at least one  
2 query result comprises determining whether the query result is sufficiently rele-  
3 vant with respect to a predetermined relevancy threshold;

4 and wherein displaying at least one received query result comprises dis-  
5 playing a query result responsive to the determination indicating that the query  
6 result is sufficiently relevant.

1 29. The method of claim 1, wherein displaying at least one received query  
2 result comprises determining displaying at least one received query result in a  
3 sequence prioritized according to estimated relevance.

1 30. The method of claim 1, further comprising:

2 after receiving at least one query result, determining whether an addi-

3 tional query should be performed;

4 responsive to a determination that an additional query should be per-

5 formed:

6 formulating an additional query containing at least one secondary

7 query key;

8 querying at least one data source with the at least one secondary

9 query key;

10 receiving at least one secondary query result from at least one data

11 source; and

12 displaying at least one received secondary query result;

1           31. The method of claim 30, wherein formulating an additional query  
2 comprises formulating an additional query comprising at least one query key  
3 from the primary document and at least one secondary query key.

1           32. The method of claim 1, wherein displaying at least one received query  
2 result comprises displaying the query result in the context of a currently active  
3 software application.

1           33. The method of claim 1, wherein displaying at least one received query  
2 result comprises displaying the query result in a sidebar pane adjacent to a cur-  
3 rently active on-screen window.

1           34. The method of claim 1, wherein displaying at least one received query  
2 result comprises displaying the query result in an on-screen window concur-  
3 rently with display of a currently active on-screen window.

1           35. The method of claim 1, wherein displaying at least one received query  
2 result comprises displaying the query result in an on-screen dialog box.

1           36. The method of claim 1, wherein at least a portion of the displayed  
2 query result comprises a hyperlink to a resource containing data related to the  
3 displayed query result.





3 an electronic communication;  
4 a word processing document;  
5 a spreadsheet document;  
6 a task item;  
7 a calendar item;  
8 a file;  
9 an image;  
10 a sound recording;  
11 a video recording; and  
12 a contact record.

1 44. The method of claim 1, wherein querying at least one data source  
2 comprises:  
3 formulating a structured query based on the extracted at least one query  
4 key; and  
5 transmitting the structured query to the at least one data source.

1 45. The method of claim 1, wherein extracting at least one query key  
2 comprises applying a part-of-speech analysis to the primary document.

1 46. The method of claim 1, further comprising:  
2 selecting at least one data source based on the extracted at least one query  
3 key;



1        55. The method of claim 1, wherein displaying at least one received query  
2        result comprises displaying the query result in a user-activated toolbar menu.

1           56. The method of claim 1, wherein displaying at least one received query  
2   result comprises:

designating at least a portion of the primary document as a hyperlink; and  
responsive to user activation of the hyperlink, displaying a query result.

1           57. The method of claim 1, wherein displaying at least one received query  
2    result comprises:

3 displaying an on-screen button; and

4 responsive to user activation of the button, displaying a query result.

1           58. The method of claim 1, wherein displaying at least one received query  
2    result comprises:

3 displaying a toolbar menu activation button; and

4 responsive to user activation of the button, displaying a query result.

1           59. The method of claim 1, wherein displaying at least one received query  
2    result comprises:

3 displaying a menu comprising at least one command; and  
4 responsive to user selection of one of the at least one command, display-  
5 ing a query result.

1 60. The method of claim 1, wherein displaying at least one received query  
2 result comprises:

3 displaying a menu activation icon;  
4 responsive to user activation of the menu activation icon, displaying a  
5 menu comprising at least one command; and  
6 responsive to user selection of one of the at least one command, display-  
7 ing a query result.

1 61. The method of claim 1, wherein displaying at least one received query  
2 result comprises:

3 recognizing user-entered text as having a format corresponding to a pre-  
4 defined data type;  
5 displaying a menu comprising at least one command applicable to the  
6 data type; and  
7 responsive to user selection of one of the at least one command, display-  
8 ing a query result.

1 62. A computer-implemented system for unconscious data retrieval, com-  
2 prising:

3 a receiver, for receiving a primary document;  
4 a requester, coupled to the receiver, for generating and transmitting to at  
5 least one data source at least one query related to the primary  
6 document;  
7 an evaluator, for receiving at least one query result from the at least one  
8 data source and for evaluating the received at least one query  
9 result; and  
10 a display, coupled to the evaluator, for displaying the at least one received  
11 query result;  
12 wherein the receiver, the requester, and the evaluator operate without  
13 user interaction.

1 63. The system of claim 62, wherein the primary document comprises an  
2 electronic communication.

1 64. The system of claim 63, wherein the primary document comprises an  
2 e-mail message.

1 65. The system of claim 64, wherein the receiver comprises an e-mail  
2 server.

1 66. The system of claim 64, wherein the receiver comprises an e-mail pro-  
2 gram running on a user's computer.

1           67. The system of claim 62, wherein the requester and the evaluator oper-  
2           ate asynchronously with respect to user interaction with the primary document.

1           68. The system of claim 62, further comprising:  
2           a storage device, coupled to the evaluator, for storing the evaluated at  
3           least one query result;

4           and wherein the display displays at least one received query result re-  
5           trieved from the storage device.

1           69. The system of claim 62, further comprising:  
2           a storage device, coupled to the evaluator, for storing the evaluated at  
3           least one query result; and  
4           an input device for receiving a query request from a user;  
5           and wherein the display further displays a query preview interface show-  
6           ing at least one query result item responsive to the received query request, and,  
7           responsive to a selection of one of the previewed items, displays a representation  
8           of the selected item.

1           70. The system of claim 69, wherein:  
2           the storage device comprises a cache; and  
3           the at least one query result item is retrieved from the cache.

1        71. The system of claim 69, wherein:  
2        the storage device comprises a text cache; and  
3        the representation of the at least one query result item is retrieved from  
4        the text cache.

1        72. The system of claim 69, wherein:  
2        the requester generates and transmits to at least one data source a request  
3        for the selected item; and  
4        the receiver receives the selected item asynchronously.

1        73. The system of claim 72, further comprising:  
2        a notifier, coupled to the receiver, for notifying the user upon completion  
3        of the asynchronous retrieval of the selected item.

1        74. The system of claim 62, wherein the requester transmits the query  
2        over a network.

1        75. The system of claim 62, wherein the requester transmits an e-mail  
2        message containing a query to the at least one data source.

1        76. The system of claim 62, wherein the requester transmits across a fire-  
2        wall an e-mail message containing a query to the at least one data source.



1           77. The system of claim 62, wherein the evaluator receives an e-mail mes-  
2     sage containing at least one query result from at least one data source.

1           78. The system of claim 62, wherein the at least one data source comprises  
2     at least one information appliance.

1           79. The system of claim 78, wherein at least one of the information appli-  
2     ances comprises one selected from the group consisting of:

- 3           a visitor kiosk;
- 4           a meeting recorder;
- 5           a presentation recorder;
- 6           a whiteboard capture device;
- 7           a communication device; and
- 8           a document management device.

1           80. The system of claim 62, wherein the evaluator estimates the relevance  
2     of the query result with respect to the primary document.

1           81. The system of claim 62, wherein the evaluator determines whether the  
2     query result is sufficiently relevant with respect to a predetermined relevancy  
3     threshold;

4 and wherein the display displays a query result responsive to the deter-  
5 mination indicating that the query result is sufficiently relevant.

1 82. The system of claim 62, wherein the display displays at least one re-  
2 ceived query result in a sequence prioritized according to estimated relevance.

1 83. The system of claim 62, wherein the display displays the query result  
2 in the context of a currently active software application.

1 84. The system of claim 62, wherein the display comprises a sidebar pane  
2 adjacent to a currently active on-screen window.

1 85. The system of claim 62, wherein the display comprises an on-screen  
2 window shown concurrently with a currently active on-screen window.

1 86. The system of claim 62, wherein the display comprises an on-screen  
2 dialog box.

1 87. The system of claim 62, wherein at least a portion of the displayed  
2 query result comprises a hyperlink to a resource containing data related to the  
3 displayed query result.

1 88. The system of claim 62, wherein at least one of the data sources com-  
2 prises a network-connected computer containing shared information.

1 89. The system of claim 62, wherein at least one of the data sources com-  
2 prises a shared directory.

1 90. The system of claim 62, wherein at least one of the data sources is in-  
2 termittently connected via a network.

1 91. The system of claim 62, wherein the primary document is one selected  
2 from the group consisting of:

3 an electronic communication;

4 a word processing document;

5 a spreadsheet document;

6 a task item;

7 a calendar item;

8 a file;

9 an image;

10 a sound recording;

11 a video recording; and

12 a contact record.

1 92. The system of claim 62, wherein the requester comprises:

2 a query formulator, for formulating a structured query based on the ex-  
3 tracted at least one query key; and

4 a transmitter, coupled to the query formulator, for transmitting the struc-  
5 tured query to the at least one data source.

1 93. The system of claim 62, wherein the evaluator applies a Bayesian be-  
2 lief net to determine estimated relevance of the at least one query result.

1 94. The system of claim 62, wherein the display comprises a portable com-  
2 puting device.

1 95. The system of claim 62, wherein the primary document comprises a  
2 text document.

1 96. The system of claim 62, wherein the primary document comprises a  
2 non-text document.

1 97. The system of claim 62, wherein the display comprises a calendar dis-  
2 play.

1 98. The system of claim 62, wherein the display comprises a user-  
2 activated toolbar menu.

1 99. A computer program product comprising a computer-usable medium  
2 having computer-readable code embodied therein for unconscious data retrieval,  
3 comprising:

4 computer-readable program code configured to cause a computer to ex-  
5 tract at least one query key from a primary document;  
6 computer-readable program code configured to cause a computer to  
7 query at least one data source with the at least one query key;  
8 computer-readable program code configured to cause a computer to re-  
9 ceive at least one query result from at least one data source;  
10 computer-readable program code configured to cause a computer to  
11 evaluate the received at least one query result; and  
12 computer-readable program code configured to cause a computer to dis-  
13 play at least one received query result;  
14 wherein the computer-readable program code configured to cause a com-  
15 puter to extract, query, receive, and evaluate operate without user interaction.

1 100. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to extract, query, receive,  
3 and evaluate operate asynchronously with respect to user interaction with the  
4 primary document.

1 101. The computer program product of claim 99, further comprising:  
2 computer-readable program code configured to cause a computer to store  
3 the evaluated at least one query result;

4 and wherein the computer-readable program code configured to cause a  
5 computer to display at least one received query result comprises:

6 computer-readable program code configured to cause a computer to re-  
7 trieve the stored at least one query result; and  
8 computer-readable program code configured to cause a computer to dis-  
9 play the retrieved at least one query result.

1 102. The computer program product of claim 99, further comprising:

2 computer-readable program code configured to cause a computer to store  
3 the evaluated at least one query result;

4 and wherein the computer-readable program code configured to cause a  
5 computer to display at least one received query result comprises:

6 computer-readable program code configured to cause a computer to re-  
7 ceive a query request from a user;

8 computer-readable program code configured to cause a computer to dis-  
9 play a preview of at least one query result item responsive to  
10 the received query request;

11 computer-readable program code configured to cause a computer to re-  
12 ceive a selection of one of the previewed items;

13 computer-readable program code configured to cause a computer to re-  
14 trieve the selected item; and

15 computer-readable program code configured to cause a computer to dis-  
16 play a representation of the selected item.

1 103. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to query at least one data  
3 source comprises computer-readable program code configured to cause a com-  
4 puter to transmit a query over a network.

1 104. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to query at least one data  
3 source comprises computer-readable program code configured to cause a com-  
4 puter to transmit an e-mail message containing a query to the at least one data  
5 source.

1 105. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to query at least one data  
3 source comprises computer-readable program code configured to cause a com-  
4 puter to transmit across a firewall an e-mail message containing a query to the at  
5 least one data source.

1 106. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to query at least one data  
3 source comprises computer-readable program code configured to cause a com-

4 puter to transmit an XML-encoded e-mail message containing a query to the at  
5 least one data source.

1 107. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to receive at least one  
3 query result from at least one data source comprises computer-readable program  
4 code configured to cause a computer to receive an e-mail message containing at  
5 least one query result from at least one data source.

1 108. The computer program product of claim 99, wherein the at least one  
2 data source comprises at least one information appliance.

1 109. The computer program product of claim 108, wherein at least one of  
2 the information appliances comprises one selected from the group consisting of:

- 3 a visitor kiosk;  
4 a meeting recorder;  
5 a presentation recorder;  
6 a whiteboard capture device;  
7 a communication device; and  
8 a document management device.

1 110. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to evaluate the received



3 at least one query result comprises computer-readable program code configured  
4 to cause a computer to estimate the relevance of the query result with respect to  
5 the primary document.

1 111. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to evaluate the received  
3 at least one query result comprises computer-readable program code configured  
4 to cause a computer to determine whether the query result is sufficiently relevant  
5 with respect to a predetermined relevancy threshold;

6 and wherein the computer-readable program code configured to cause a  
7 computer to display at least one received query result comprises computer-  
8 readable program code configured to cause a computer to display a query result  
9 responsive to the determination indicating that the query result is sufficiently  
10 relevant.

1 112. The computer program product of claim 99, further comprising:  
2 computer-readable program code configured to cause a computer to, after  
3 receiving at least one query result, determine whether an addi-  
4 tional query should be performed;  
5 computer-readable program code configured to cause a computer to, re-  
6 sponsive to a determination that an additional query should be  
7 performed:

8                   formulate an additional query containing at least one secondary  
9                   query key;  
10                  query at least one data source with the at least one secondary query  
11                  key;  
12                  receive at least one secondary query result from at least one data  
13                  source; and  
14                  display at least one received secondary query result;

1           113. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises computer-readable program code configured to  
4 cause a computer to display the query result in the context of a currently active  
5 software application.

1           114. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises computer-readable program code configured to  
4 cause a computer to display the query result in a sidebar pane adjacent to a cur-  
5 rently active on-screen window.

1           115. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises computer-readable program code configured to

4 cause a computer to display the query result in an on-screen window concur-  
5 rently with display of a currently active on-screen window.

1 116. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises computer-readable program code configured to  
4 cause a computer to display the query result in an on-screen dialog box.

1 117. The computer program product of claim 99, wherein at least one of  
2 the data sources comprises a network-connected computer containing shared in-  
3 formation.

1 118. The computer program product of claim 99, wherein at least one of  
2 the data sources comprises a shared directory.

1 119. The computer program product of claim 99, wherein the primary  
2 document is one selected from the group consisting of:

- 3 an electronic communication;
- 4 a word processing document;
- 5 a spreadsheet document;
- 6 a task item;
- 7 a calendar item;
- 8 a file;

- 9 an image;
- 10 a sound recording;
- 11 a video recording; and
- 12 a contact record.

1 120. The computer program product of claim 99, wherein the computer-  
 2 readable program code configured to cause a computer to query at least one data  
 3 source comprises:

- 4 computer-readable program code configured to cause a computer to for-  
 5 mulate a structured query based on the extracted at least one  
 6 query key; and
- 7 computer-readable program code configured to cause a computer to  
 8 transmit the structured query to the at least one data source.

1 121. The computer program product of claim 99, wherein the computer-  
 2 readable program code configured to cause a computer to extract at least one  
 3 query key comprises computer-readable program code configured to cause a  
 4 computer to apply a part-of-speech analysis to the primary document.

1 122. The computer program product of claim 99, wherein the computer-  
 2 readable program code configured to cause a computer to evaluate the received  
 3 at least one query result comprises computer-readable program code configured



4 computer-readable program code configured to cause a computer to des-  
5 ignate at least a portion of the primary document as a hyperlink;  
6 and  
7 computer-readable program code configured to cause a computer to, re-  
8 sponsive to user activation of the hyperlink, display a query re-  
9 sult.

1 127. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises:

4 computer-readable program code configured to cause a computer to dis-  
5 play an on-screen button; and  
6 computer-readable program code configured to cause a computer to, re-  
7 sponsive to user activation of the button, display a query result.

1 128. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises:

4 computer-readable program code configured to cause a computer to dis-  
5 play a toolbar menu activation button; and  
6 computer-readable program code configured to cause a computer to, re-  
7 sponsive to user activation of the button, display a query result.

1           129. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises:

4           computer-readable program code configured to cause a computer to dis-  
5           play a menu comprising at least one command; and  
6           computer-readable program code configured to cause a computer to, re-  
7           sponsive to user selection of one of the at least one command,  
8           display a query result.

1           130. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises:

4           computer-readable program code configured to cause a computer to dis-  
5           play a menu activation icon;  
6           computer-readable program code configured to cause a computer to, re-  
7           sponsive to user activation of the menu activation icon, display  
8           a menu comprising at least one command; and  
9           computer-readable program code configured to cause a computer to, re-  
10          sponsive to user selection of one of the at least one command,  
11          display a query result.

1           131. The computer program product of claim 99, wherein the computer-  
2 readable program code configured to cause a computer to display at least one  
3 received query result comprises:

4           computer-readable program code configured to cause a computer to rec-  
5 ognize user-entered text as having a format corresponding to a  
6 predefined data type;

7           computer-readable program code configured to cause a computer to dis-  
8 play a menu comprising at least one command applicable to the  
9 data type; and

10          computer-readable program code configured to cause a computer to, re-  
11 sponsive to user selection of one of the at least one command,  
12 display a query result.